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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER HANNON, CHRISTIAN A				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/569,179

Applicant(s)LINNARTZ, JOHAN PAUL MARIE
GERARD**Examiner**

CHRISTIAN A. HANNON

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6, 14, 16 and 18 is/are rejected.
- 7) ☒ Claim(s) 2-4, 7-15, 19-22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 6, 14, 16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Frost et al (US 4,097,866), hereinafter Frost.

Regarding claim 1, Frost teaches a diversity receiver for receiving a desired content carried by a radio signal on a radio channel, said diversity receiver comprising a first receiving branch having associated thereto a first antenna element for receiving a first signal (see Figure, omni-antenna 1), at least a second receiving branch having associated thereto a second antenna element for receiving a second signal (see Figure, omni-antenna 2), first means for obtaining from the first signal on the first receiving branch and the second signal on the second receiving branch, a third signal representing an estimation of a spatial derivative of at least one receiving channel parameter (output of summer 17 is the third signal), second means for processing the third signal to obtain a fourth signal (second means is mixer 12, with the output thereof the fourth signal), third means for processing the first signal as received by the first receiving branch to obtain a fifth signal (third means is mixer 8, with the fifth signal being the output thereof), and a fourth means for combining the fourth

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signal and the fifth signal to obtain an output signal, said output signal corresponding to the desired content of the radio signal (fourth means is summer 4, with the output thereof being the 'unjammed' "desired content"), wherein the third signal is used to cancel or at least reduce signal distortions that occur due to time-variations of the receiving channel, as based on certain times, different jammers may be present (the third signal, output of summer 17, is used in conjunction with the loops in the figure to reduce jammer signals that occur due to time varying signal sources; see also column 2, lines 20-64). It is noted by the Examiner that the preamble gives rise to the intended use of the receiver method in a moving diversity receiver, however If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction.

Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999). See also *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997) ("where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation") (see MPEP 2111.02). In the present case since the body of the claim in no way addresses the aspect of a moving receiver the preamble may not justifiably be construed as a claim limitation, and accordingly has not been addressed by the Examiner with the prior art.

Regarding claim 6, Frost teaches claim 1, wherein one or more of the first means, the second means the third means and the fourth means are fully or in part realized by hardware interacting with software or by discrete components (see figure, the feedback from loops comprises the controls which interact with the 'hardware' components and accordingly read on the claim; see figure).

Regarding claims 14 and 16, Frost teaches a method and computer readable medium for cancelling or at least reducing signal distortions of a desired content carried by a radio signal received by a moving diversity receiver, wherein the signal distortions occur due to time-variations of a receiving channel in a radio system, said method comprising the acts of receiving a first signal on a first receiving branch having associated thereto a first antenna element (see figure, antenna 1), receiving a second signal on a second receiving branch associated thereto a second antenna element (see figure, antenna 2), obtaining from the first signal and from the second signal, a third signal representing an estimation of a spatial derivative of at least one receiving channel parameter (see figure, summer 17), processing the third signal to obtain a fourth signal (processing done by mixer 12 of figure), processing the first signal as received to obtain a fifth signal (processing done at item 8 of figure), combining the fourth signal and the fifth signal to obtain an output signal corresponding to the desired content of the radio signal (combining taking place at summer 4 of figure). It is noted by the Examiner that the preamble gives rise to the intended use of the receiver method in a moving diversity receiver, however If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely

states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction.

Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999). See also *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997) ("where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation") (see MPEP 2111.02). In the present case since the body of the claim in no way addresses the aspect of a moving receiver the preamble may not justifiably be construed as a claim limitation, and accordingly has not been addressed by the Examiner with the prior art.

Regarding claim 18, Frost teaches a diversity receiver for receiving a desired content carried by a radio signal on a radio channel, said diversity receiver comprising a first antenna configured to receive a first signal on a receiving channel (see figure, antenna 1 and output thereof), a second antenna configured to receive a second signal on a receiving channel (see figure, antenna 2 and output thereof), a first combiner configured to form a third signal from the first signal and the second signal (summer 3 of figure), a first processing unit configured to process the third signal to obtain a fourth signal (mixer item 12 of figure with output thereof as the fourth signal), a second processing unit configured to process the first signal as received to obtain a fifth signal (see figure item 8, output thereof is the fifth signal), a second combiner configured to

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combine the fourth signal and the fifth signal to obtain an output signal corresponding to the desired content of the radio signal (output of figure as shown stemming from summer item 4), wherein the third signal represents an estimation of a spatial derivative of at least one receiving channel parameter and wherein the third signal is used to reduce signal distortions that occur due to time-variations of the receiving channel (third signal as used is to mitigate jammers occurring at different times, as disclosed by Frost at any given time any number of jammers [of varying powers] may be present; see column 2, lines 20-64).

Claim Objections

3. Claims 2, 7, 9 and 13 are objected to because of the following informalities: the aforementioned claims all include language within the body of the claim in parenthesis, as it is unclear if this material is to be part of the claim body or not, it is advised that the parenthetical material either be removed from the claim outright, or merely remove the parenthesis to eliminate any such confusion. Appropriate correction is required.

Allowable Subject Matter

4. Claims 2-4, 7-13, 15, 19-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 2, Frost discloses claim 1, however fails to teach wherein the first antenna element and the second antenna element are closely spaced and arranged behind each other in a direction of motion (v) of the diversity receiver.

Regarding claim 3, Frost discloses claim 1, however fails to teach wherein the first means obtains the third signal as a difference between the first signal and the second signal.

Regarding claim 4, Frost teaches claim 1, however fails to teach wherein the third signal is interpreted as a temporal derivative of the at least one receiving channel parameter, at least when the diversity receiver is moved.

Regarding claim 7, Frost teaches claim 1, however fails to teach wherein the second means perform one or more of the following functions: filtering, sampling, A/D-conversion, serial-to-parallel conversion, multiplying with a ramp function, (Fast) Fourier Transforming, multiplying with a crosstalk matrix, and signal weighting.

Regarding claim 8, Frost teaches claim 1, however fails to teach wherein the second means perform a signal weighting function comprising a multiplication with a weighting factor ($*;d/v$) controlled to minimize the signal distortions.

Regarding claim 9, Frost teaches claim 1, however fails to teach wherein the third means perform one or more of the following functions: filtering, sampling, A/D-conversion, serial-to-parallel conversion, and (Fast) Fourier Transforming.

Regarding claim 10, Frost teaches claim 1, however fails to teach wherein the at least one receiving channel parameter is a receiving channel transfer function.

Regarding claim 11, Frost teaches claim 1, however fails to teach wherein said diversity receiver further comprises switching means for switching from a signal on the first receiving branch to a corresponding signal on the second receiving branch thereby creating a virtual third antenna element.

Regarding claim 12, Frost teaches claim 1, however fails to teach wherein the first antenna element and the second antenna element are arranged in parallel but extend in different directions.

Regarding claim 13, Frost teaches claim 1, however fails to teach wherein the diversity receiver is adapted to be used in one or more of the following systems: Orthogonal Frequency Division Multiplexing (OFDM) systems, Digital Audio Broadcasting (DAB) systems, Digital Video Broadband (DVB) systems, for example DVB-T systems, Digital Terrestrial Television Broadcasting (DTTB) systems, Code Division Multiple Access (CDMA) systems, for example cellular CDMA systems, Universal Mobile Telecommunications Systems (UMTS), the Global System for Mobile communications (GSM), Digital Enhanced Cordless Telecommunication (DECT) systems, wireless local area network systems, for example according to the standard 802.11a, 802.11g, or HIPERLAN II.

Regarding claim 15, Frost teaches claim 14, however fails to teach wherein the act of estimating the spatial derivative comprises calculating a

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difference between the radio signal received at a first position of said two closely spaced positions and the radio signal received at a second position of said two closely spaced positions.

Regarding claim 19, Frost teaches claim 18, however fails to teach wherein the first combiner is configured to form the third signal from the first signal and a difference signal, the difference signal being a difference between the first signal and the second signal.

Regarding claim 20, Frost teaches the diversity receiver as claimed in claim 19, however fails to teach wherein said diversity receiver further comprises a weighting unit configured to multiply the difference signal with a factor that depends on at least one a speed of the diversity receiver and a distance between the first antenna and the second antenna.

Regarding claim 21, Frost teaches the diversity receiver as claimed in claim 19, however fails to teach wherein said diversity receiver further comprises a decorrelator configured to decorrelate the difference signal and the third signal and compute a weighting factor for weighting the difference signal.

Regarding claim 22, Frost teaches the diversity receiver as claimed in claim 19, however fails to teach wherein said diversity receiver further comprises a multiplier configured to multiply the difference signal with a linearly increasing ramp function.

Response to Arguments

5. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTIAN A. HANNON whose telephone number is (571)272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. A. H./
Examiner, Art Unit 2618

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August 21 2009

/Edward Urban/

Supervisory Patent Examiner, Art Unit 2618